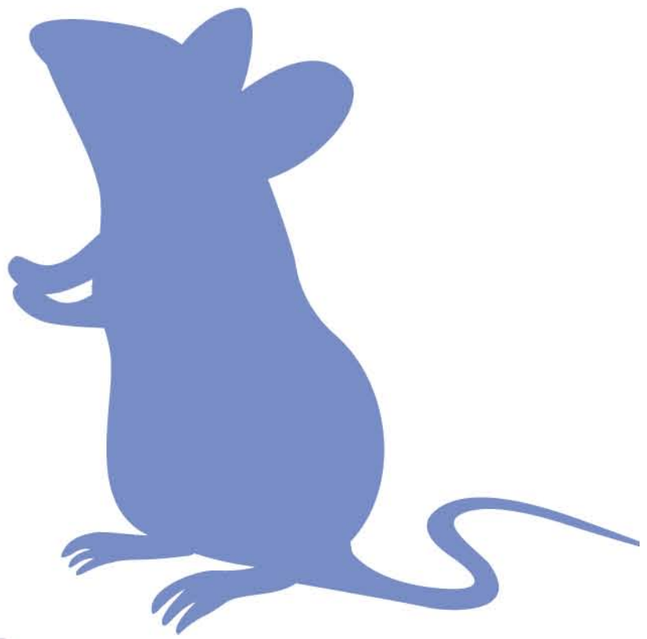
2013-2014 AMMRA Annual Report

# AMMRA
# Annual Report

http://www.ammra.info/

2013-2014



# AMMRA
# Annual Report

**2013-2014**

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# AMMRA, the Past and Future

## President – Dr. Xiang Gao

*AMMRA services as a strong bondage for us all. Personally, I wish to express my appreciation to Dr. Ken-ichi Yamamura for his vision and tremendous efforts over last 6 years. Of course I am also in debt to all members in AMMRA for the achievement of AMMRA. Nothing can be achieved without your hard work and enthusiasm. And with your continuous support, AMMRA will overcome all difficulties.*

Aiming the functional annotation of all mammal coding genes, several key institutes for mouse genetic research in EU, American and Canada formed the International Mouse Knockout Consortium (IKMC) in 2006. Unfortunately, Asian countries were left out of circle. This fact prompts us to consider establish a multinational organization for promoting the mouse mutagenesis in Asia. In November 22, 2006, Shanghai Institute of Life Science of Chinese Academy organized a special workshop for launching the Asian Mouse Mutagenesis and Resource Association (AMMRA) at Shanghai. More than 40 scientists from China, Japan, Korea, Taiwan, and Singapore attended this meeting and agreed on the needs for establishing AMMRA. AMMRA mission is “to promote mouse mutagenesis projects and to facilitate access to mouse resources in Asia”. The founding members include following institutes: 1) Center for Animal Resources and Development, Kumamoto; 2) Biological Resource Center, Singapore; 3) National Laboratory Animal Center, National Applied Research Laboratories, Taipei; 4) National Resource Center for Mutant Mice, Nanjing University, Nanjing; 5) Shanghai Institute of Biological Sciences, Shanghai; 6) Shanghai Research Center for Model Organisms, Shanghai; 7) Peking University- BLARC, Beijing, 8) Beijing Institute of Laboratory Animal Science, CAMS, PUC, Beijing; 9) Bio-Evaluation

Center, KRIBB, Daejeon; 10) Riken BioResource Center, Tsukuba. Most of these institutes are key resource centers in the region. Dr. Kenichi Yamamura from Kumamoto University, the chairman of the workshop, was elected as first president of AMMRA.

Subsequently, AMMRA annual meeting was held at NRCMM at Nanjing in 2007, KRIBB at Daejeon in 2008, CARD at Kumamoto in 2009, NLAC NARLabs at Taipei in 2010, BRC at Singapore in 2011, and NRCMM at Nanjing in 2012. At early years, AMMRA activities were mostly focused on the communication among the resource centers. Eventually, these resource centers started to hold joined the education program on mouse related technologies. For instance, CARD had held training classes for cryopreservation in Shanghai and Beijing in 2009 and 2012. The mouse pathology workshop held by NLAC NARLabs and Johns Hopkins University was opened to all AMMRA members in 2010. Moreover, MARC of Nanjing University and BRC RIKEN agreed to establish a joined international short course series for mouse research. This short course covers broad range of content in mouse genetics, from history of mouse research to genetic manipulation, disease model phenotyping, stem cell and cloning, cryopreservation, mouse colonial management. The first class was held in BRC RIKEN in July 2012. And the second class is scheduled in MARC, Nanjing in July 2013.

To further enhance the solid collaboration for generating, preserving and distributing mouse resources among members, AMMRA outlined the policies and charters of the association, such as the definition, mission, goal, purpose, structure, and governance at the 5th conference in Taipei in November 2010. At the 6th conference organized in Singapore on November 2011, IT committee (Dr. Masuya at RIKEN BRC serves as the chair) and annual report committee (Dr. Wang from NLAC NARLabs in Taipei serves as the chair) were formalized. Currently, an integrated database of mouse strains in Asian is under construction and the first annual report of AMMRA is published in 2013.

The AMMRA activity also facilitated the birth of Asian Mouse Phenotyping Consortium (AMPC). In September 23rd 2011, the International Mouse Phenotyping Consortium (IMPC) kicked off at NIH. The ambitious ten years project is aimed to systematically phenotype KO strains generated using ES cell lines developed by IKMC.

Both RIKEN BRC in Japan and MARC in China became the IMPC member in 2011. In summer of 2012, Korea also joined the IMPC and NLAC in Taiwan will follow soon. In accordance with the IMPC pipeline, AMMRA members began to discuss additional functional screening for better utilizing the existing phenotyping platform in China, Japan, Korea and Taiwan. These discussions eventually led to the inauguration of the AMPC at Taipei in 2010. All large phenotyping centers, including NLAC NARLabs in Taiwan, MARC/NRCMM in China, IDB of Fudan University in China, KRIBB in Korea, and RIKEN BRC in Japan are founding members of AMPC. In March 2012, AMMRA and AMPC held joined annual meeting in Nanjing, attracted more than 100 participants.

I believe the most important question is whether AMMRA can continuously fulfill its role in future. With the new genome manipulation technologies, such as ZFN, TALEN and CRISPR-Cas, mutant mice are generated much easily today. How do we get these strains' information more accurate and faster? Where can we find better service center for making these disease models? We are still not even close to satisfy ourselves.

Another crucial issue for AMMRA is that how AMMRA will take concerted action with the IMPC. The current IMPC pipeline is focused on only gene functional annotation, not clinic or pharmaceutical applications. For instance, the challenge model or aging model is not included in the standard IMPC assay. Nevertheless, these assays may post the most crucial clinic application. Should the AMPC and AMMRA work together to solve the problem and initiate the new pipeline?

And at last, the training issue. Currently, most the training courses are provided and managed by individual institute, is it possible AMMRA serves as a coordinator for promoting these courses as well as make them more suitable for systematic studies? Indeed the earth is becoming flat. And we are all become close friends thorough the AMMRA activities. This annual report just signatures the new beginning of bright future of Asian mouse research.

# Welcome Address

**Honorary Former Chair – Dr. Ken-ichi Yamamura**

*Dear AMMRA members,*

*AMMRA started in 2006. Since then, there were dramatic changes in terms of production, cryopreservation, supply and phenotyping of genetically engineered mice. To promote life sciences in Asia, it is essential to trust, help, and cooperate with each other. I believe that initial phase is successful through the activities of AMMRA. Let's move on to the growth phase of AMMRA.*

Kenichi Yamamura

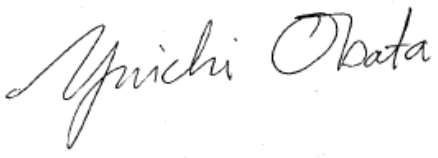
# Welcome Address

**Vice President – Dr. Yuichi Obata**

*The mouse is the most sophisticated experimental animal among many species. By the scientific endeavors over 100 years, many inbred mouse strains have been established, DNA sequence of a whole genome was determined and the methods for modification of genes and manipulation of embryo have been developed. The disadvantage in the mouse as an experimental animal is its high cost of rearing. Due to this disadvantage, the science using the mouse was much delayed in Asia when compared with that in North America and Europe. However, in the last decade or so, significant social and scientific advancement and improvement were made in Asia. It is time for Asian scientists to be in the front line of science. To accelerate this movement in Asia, AMMRA was established.*

*There are many issues to be solved for AMMRA. Examples are how to ensure easy access to mouse strains held by AMMRA members, improve technologies, harmonize quality control of mouse strains, and train and educate of staff in the member institution. It would be very difficult for a single institution to solve all these issues, but it may be possible as an association if there are collaborative efforts among member institutions.*

*As a vice president of this association, I do my best to help the AMMRA president, Dr. Gao and each member institutes to accomplish the common goals of AMMRA by solving issues stated above.*



## AMMRA Members

- ● Australian Phenomics Facility, Australian National University, Canberra
- ★ Biological Resource Center, Singapore
- ★ Center for Animal Resources and Development, Kumamoto
- ☆ Institute of Developmental Biology and Molecular Medicine of Fudan University, Shanghai
- ★ Institute of Laboratory Animal Science, Chinese Academy of Medical Sciences, Peking Union Medical College, Beijing
- ★ Laboratory Animal Resource Center, KRIBB, Ochang
- ★ Laboratory of Cardiovascular Genomics of Ewha Woman's University, Seoul Nanfang Center for Model Organism, Shanghai
- ☆ National Institute of Food and Drug Safety Evaluation, Seoul
- ★ National Laboratory Animal Center, National Applied Research Laboratories, Taipei
- ★ National Resource Center for Mutant Mice, Nanjing University, Nanjing
- ★ Peking University-Beijing Laboratory Animal Research Center Mouse Genomics Center, Beijing
- ★ Riken BioResource Center, Tsukuba
- ☆ Seoul National University, Seoul
- ★ Shanghai Laboratory Animals Center, Shanghai Institute of Biological Sciences, Shanghai
- ☆ Sookmyung Women's University, Seoul
- ☆ Yonsei University, Seoul

★ Founding members

● Newly joined members (2013)

# AMMRA Charter

Definition

The Asian Mouse Mutagenesis and Resource Association (AMMRA) is a collaborative group of the development, archiving/distribution, coordination of phenotyping and informatics of mutant mice in Asia.

Mission

To promote and coordinate the development, archiving/distribution, phenotyping, and informatics of mutant mouse, and to facilitate access to mouse resources in Asia

Goal

Use of mouse models for understanding the genome function and improvement of human health

Purpose

1. AMMRA is an international organization whose members, in a manner consistent with the governmental obligations and legal responsibilities of each, pledge to:
   (1) facilitate the use of mouse resource and research centers across national boundaries and barriers in Asia;
   (2) commit to cooperative, standardized approaches to the development, archiving/distribution and quality control of mouse models;
   (3) establish commonly shared principles on operation control as regards to animal health, genetics and environmental management;
   (4) work cooperatively to facilitate access to and utilization of available resources, services, and expertise in all aspects of the development, archiving/distribution, coordination of phenotyping and informatics of mouse models
2. AMMRA's goal is to facilitate the use of mouse models of human disease, behavior and development for the benefit of researchers in biomedical field.

Structure and Governance

1. The primary criterion for admission to AMMRA institutional membership is each

member must be a mouse repository or mouse research facilities, supported by the national government, which has an independent, sustainable operating budget, and dedicated infrastructure and resources. The applicant organization must also agree to the AMMRA's principles of operations, and actively participate in AMMRA operations. Commercial membership is also available based on the merits of the applicant company in compliance to the AMMRA's principles and with support to AMMRA activities.

2. AMMRA is governed by the members of Board of Directors (BOD) including president and vice president, comprised of the institutional members of each Asian country / region.
3. The Board of Directors is responsible for developing strategic and financial plans and, when appropriate, will appoint committees to address specific goals. It is responsible for:
   (1) convening at least one meeting annually
   (2) electing officers
   (3) considering additions and eliminations of the membership
   (4) ensuring to maintain the web site
   (5) empowering educational activities
   (6) adopting the standards of operation agreed upon in committee
   (7) preparing amendments to the AMMRA Charter
   (8) fund raising with governmental, industrial and private funding agencies and academic institutions
   (9) overseeing the ultimate dissolution of AMMRA
4. President of AMMRA is elected by the members of Board of Directors (BOD). The term of President is 2 years and takes turns to be selected from different area.
5. The Vice-President is nominated by the president. The President and Vice-President are responsible for the activities and finances of AMMRA, with the concurrence of the BOD.
6. Prospective member organizations must make application through the BOD of the relevant area. The Vice-President will assist in preparing the case for admission, bring it to the convened AMMRA Board, and shepherd it through to a vote. Elimination of a member organization will proceed in a similar fashion with the BOD of the relevant area moving for elimination.
7. Although consensus on all matters will be sought, practice dictates passage of all votes by a half majority, provided a quorum is present.

**Head office**

President's institution

**Website**

http://www.ammra.info/

**Membership**

1. Institutional membership:

   Annual fee: $1,000 USD

   Duty:

   (1) Providing information on their resources

   (2) Sharing mice resources

   (3) Support to expanding professional techniques in mouse biology

   (4) Providing annual report according to AMMRA forms

2. Individual membership

   Open to mouse scientists in Asia

**Integration of AMMRA into IKMC**

AMMRA as a whole is integrated into IKMC

Terms of Reference

The role of the Steering Committee is to provide oversight of and to facilitate coordination between international efforts in the generation of knockout mouse resources. Specifically the Steering Committee will:

1. Promote coordination of the international efforts through the sharing of production plans (such as gene lists, plans for mouse production, etc.) and production status to minimize unnecessary redundancy;
2. Promote maximum efficiency in the generation of mouse-gene knockouts by ensuring the sharing of information regarding new approaches and technologies developed during the programs;
3. Ensure free and open release of data and resources generated;
4. Promote dissemination of knowledge, tools, policy and best practice in the field of mouse genomics;
5. Promote coordination on issues such as archiving and distribution to ensure the data and resources generated are readily accessible to the scientific community;
6. Promote discussion of future strategy for mouse functional genomics;

7. Coordinate public communications regarding individual efforts or the international effort as a whole.

**Advisory Board**

Advisory Board members will be invited from global society in the field of mouse genetics.

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# AMMRA Organizations

| | |
|---|---|
| President<br>(Term 2012-2014) | Xiang Gao, NRCMM |
| Vice-President<br>(Term 2012-2014) | Yuichi Obata, Riken BRC |
| BOD from Institutional Members | Kumamoto University<br>Riken BRC<br>Nanjing University<br>KRIBB<br>BRC<br>NLAC NARLabs |
| General Secretary and Treasurer | Je Kyung Seong, SNU |
| IT Committee | Hiroshi Masuya, Riken BRC (Chair)<br>Arun Kumar Manickam, BRC<br>Ki-Hoan Nam, KRIBB<br>Xiaojun Lei, NRCMM<br>Hsian-Jean Genie Chin, NLAC NARLabs<br>Yukiko Yamazaki, NIG |
| Annual Report Committee | Chi-Kuang Leo Wang, NLAC NARLabs<br>(Chair) |

# Briefing from Member Institutions


| Australian Phenomics Facility<br>The John Curtin School of Medical Research<br>Australian National University, Canberra, ACT, Australia | |
|---|---|
| Institute Director/ President | Dr. Steve Winslade, CEO<br>Dr. Chris Goodnow, CSO |
| AMMRA contact person | Dr. Edward Bertram |
| Phone | +61-2-6125-1328 |
| E-mail | Edward.Bertram@anu.edu.au |
| Institute address | Australian Phenomics Facility, The Australian National University, Hugh Ennor Building 117, Garran Road, Canberra ACT, Australia 2601 |
| Website | www.apf.edu.au |

## APF, The John Curtin School of Medical Research, Australian National University, Canberra, ACT, Australia

**Part I – Institution Briefing**

## Brief Description

The Australian Phenomics Facility (http://www.apf.edu.au/ ) is non-profit and supports open access large-scale phenotyping of humans and mice to uncover the biological drivers in human disease. The Australian Phenomics Facility specialises in the development, characterising and archiving of mouse models of human disease. We have an experienced genomics and bioinformatics capability focused on the identification of single nucleotide polymorphisms and the phenotyping capability to make the biological associations with probable human disease traits. Our goals are to firstly derive the underlying genetic mechanisms, and then look to extend this across the population and better understand cohort differences and responses.
The facility was established in 2004 and receives funding from the Australian Government's NCRIS, Super Science and CRIS programmes through the Australian Phenomics Network and contributions from the Australian National University. We have an open access policy and support academic and corporate research programmes in Australia and internationally.
**Accreditation:** AEEC, AALAS, IACUC, OGTR, NLRD,
**Memberships:** APN, IMPC, ISTT, AMPC,

## Resources:

All services are publically accessible on partial to full cost recovery.
**Animal Holding:** The APF offers a complete strain management package to meet researchers needs. From the moment of importing, rederiving or creating your strain, a project manager and highly trained technical staff will care for and take responsibility of all your mouse maintenance needs.

**Australian Phenome Bank:** (http://pb.apf.edu.au ). The Australian Phenome Bank (APB) is a centralised repository of genetically modified mouse strains and strain information used in Medical Research in Australia. The database includes gene and allele information, descriptions of phenotypes of both homozygous and heterozygous

animals and links to publicly available information relating to each strain. The Curator reviews all strain submissions, ensures correct nomenclature is assigned and registers alleles and strains with MGI.

**Missense Mutation Library:** (https://databases.apf.edu.au/mutations/ ). Utilising whole exome sequencing and our N-ethyl-N-nitrosourea (ENU) mouse mutagenesis pipeline we are generating hundreds of thousands of known missense and nonsense variants on the inbred C57BL/6 genetic background. We are rapidly expanding the number of genes with mutations and in a large proportion of genes we have collected an allelic series. Interrogation of the Missense Mutation Library is assisted through annotations by Mouse Genome Informatics (MGI) and Online Mendelian Inheritance in Man (OMIM) and Orphanet, linking your search to publically available information related to your gene of interest.

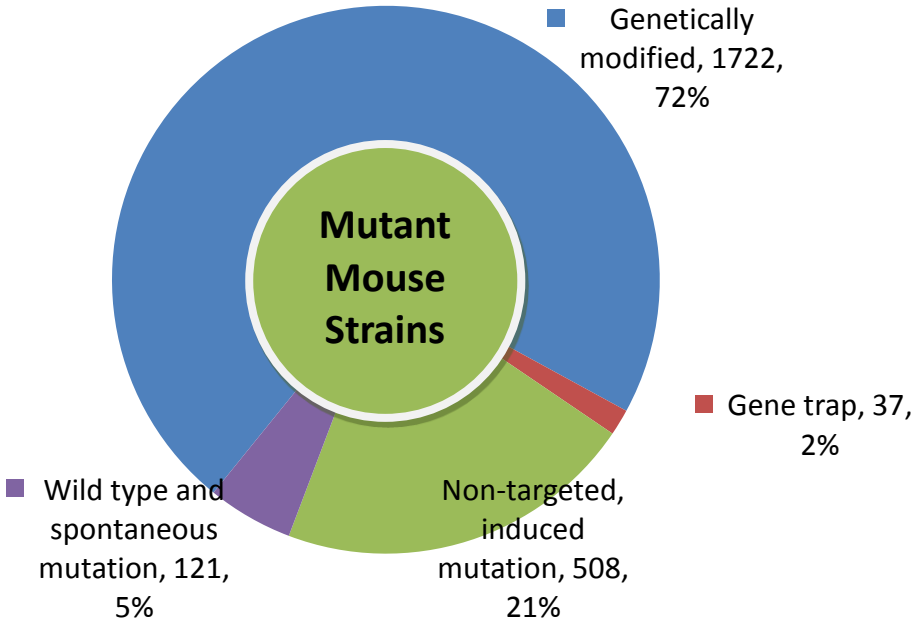
**Cryopreservation/ IVF / Rederivation:** The APF offers the latest techniques for protecting and recovering your mouse strain through the manipulation of gametes.

**Genomics:** Next generation sequencing technology and bioinformatics has opened up a new dimension for integrating phenomics, molecular biology, and systems biology for mouse and human. Our highly validated pipeline will accurately identify your variants and we provide a number of phenotyping assays.

**Phenotyping:** The APF's Scientific Programs Team combines scientific expertise, project management as well as laboratory-based expertise to undertake complex research investigations for the research community. Our team regularly manage the production of gene variant mice, coordinate and perform phenotyping assays and provide a range of data management and analysis expertise and services. We have a range of equipment including Mesoscale discovery S6000, Indiko Plus Clinical Chemistry, small animal bioluminescence, fluorescence, micro CT, histology, PIXImus densitometry.

## Part II - Mutant Rodent Resource

| Australian Phenome Bank | |
|---|---|
| Repository Director | Stuart Read |
| Repository Director's Email | Stuart.Read@anu.edu.au |
| Numbers of repository service related personnel? | PI: 1<br>Staff: 4 |
| Mouse strain resource | Live: 700<br>Cryopreserved: 2388<br>ENU induced mutations/ MML: 175,857 |
| Rat strain Resource | Live: 1 |
| IMSR registered? | ○ Yes<br>● No |
| Source of resource | ○ Government funding generated<br>○ Deposited by researchers |



**Part III - Special Announcement**

(For posting events from the past year or which will happen in the coming year)

**EVENT**

Towards precision medicine: Phenotyping human diseases in mice

*The 16th Frank and Bobbie Fenner Conference*

ANU, Canberra, 20-23 October 2014

http://towardsprecisionmedicine-symposium2014.org.au/

Including

- 2 day Symposium
- AMMRA-AMPC annual business meeting
- 1.5 day AMMR-AMPC Workshop

| Biological Resource Centre, A-STAR, Singapore | |
|---|---|
| Institute Director/ President | Dr. Ian Gray |
| Scientific Director | Dr. Sathivel Ponniah |
| AMMRA contact person | Manickam Arun Kumar |
| Phone | +65-6464-2325 |
| E-mail | arunkumar@brc.a-star.edu.sg |
| Institute Address | 8A Biomedical Grove,<br>BRC Dept. 3 Level 7 Immunos Building<br>Singapore 138668 |
| Website | https://www.brc.a-star.edu.sg/ |

# Biological Resource Centre, A-STAR, Singapore

**Part I – Institution Briefing**

BRC, which started its operations in 2005, is part of the Biomedical Sciences Institutes which comes under the Agency for Science, Technology and Research. It is a non-profit entity and is funded by A*STAR.
It first obtained AAALAC accreditation in 2009 and has been AAALAC accredited since then. As a service facility we provide husbandry and other services to our users who can be from academic or commercial entities. The services we carry out are listed below and although we carry out cryopreservation of strains developed here at the BRC, we do not consider this as a repository for strains that are generated outside of BRC. We do not at the moment have a dedicated phenotyping analysis platform, but some of the users have specific phenotyping equipment that they use for their own research. These are accessible to other researchers through collaborations.

**Scientific Services available at the Biological Resource Centre at Biopolis.**

- Re-derivation by embryo transfer.
- Micro-injection – DNA or RNA into fertilized eggs and ES cell injections into blastocyst and subsequent implantation and generation of founder transgenic or chimeric mouse respectively.
- Polyclonal antibody production in mice and rabbits.
- Cryopreservation of mouse sperm and embryo is available as a service.
- IVF to generate animals from frozen sperm or implantation of frozen embryos to generate mouse lines.

**Animal Gene Editing Laboratory (AGEL)**

- Targeting vectors: Design and construction of any gene targeting (knockout/knockin) and transgene expression vectors.
- Targeted ES lines and Kockout/Knockin mice: Generation of germline-competent targeted ES cell lines, and subsequent knockout/knockin mice by blastocyst injection.
- Transgenic mice: Creation of Rosa26 locus-based (non-random integration) transgene expression mice with Cre-activated tissue specificity.

- Tetracycline inducible models: Creation of tetracycline-inducible mice
- with single copy integration of transgene at a specific genomic locus (non-random integration).
- Nuclease-based gene editing in cells and animals: Construction and activity testing of TAL Effector Nucleases (TALENs) targeting to specific genomic region of any species.

**Other services:**

- Establishing ES cell lines from mice.
- Supplying of mouse embryonic fibroblast.
- Genotyping of mice.
- Colony maintenance and breeding set ups.
- Dosing of rodents.
- Toxicology studies in rodents.
- Implantation of cell lines or primary tumours into immunocompromised mice.


## Center for Animal Resources and Development, Kumamoto

| | |
|---|---|
| Institute Director/ President | Yuichi Oike |
| AMMRA contact person | Naomi Nakagata |
| Phone | +81-96-373-6564 |
| E-mail | nakagata@kumamoto-u.ac.jp |
| Institute address | 2-2-1 Honjo, Kumamoto 860-0811, Japan |
| Website | http://card.medic.kumamoto |

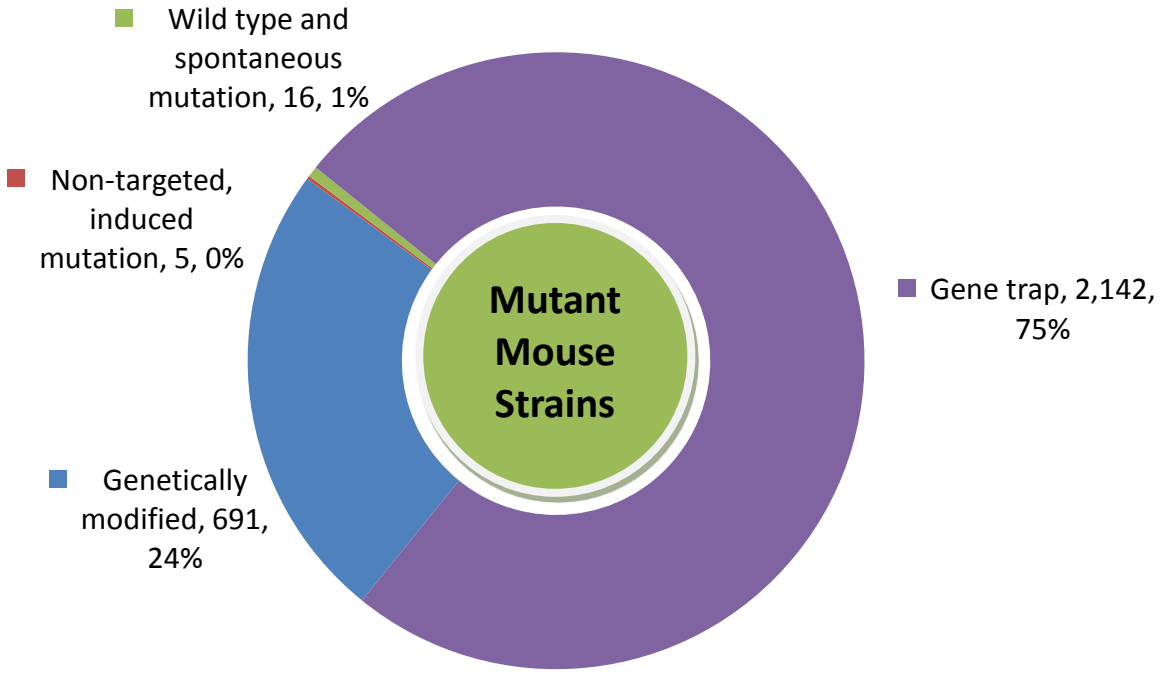
# Center for Animal Resources and Development, Kumamoto

**Part I – Institution Briefing**

- CARD is located in the Honjo campus of Kumamoto University, a government-funded non-profit national university corporation. It was established in 1998 in line with recommendations made in “Preservation, Supply and Development of Genetically Engineered Animals”, a report published by the Japanese Ministry of Education, Culture, Sports, Science and Technology.
- Further details of CARD and its work can be found on the CARD website at http://card.medic.kumamoto-u.ac.jp/card/english/index.html.
- CARD is a global hub for the production, phenotyping, cryopreservation, and supply of genetically engineered mice. To promote biological sciences worldwide, CARD produces genetically engineered mice and exchangeable gene trap ES cell clones; cryopreserves mouse embryos and sperm; supplies these resources; and organizes training courses to educate people. To this end, Kumamoto Mouse Clinic commenced full activities in April 2013.
- As a founding member of the International Gene Trap Consortium, the Federation of International Mouse Resources (FIMRe), and the Asian Mouse Mutagenesis and Resource Association (AMMRA), CARD continues to contribute to the promotion of biological sciences worldwide. CARD transfers data on mouse strains to the International Mouse Strain Resource (IMSR, http://www.findmice.org/ ) and data on Exchangeable Gene Trap Clones (http://egtc.jp/ ) to the International Gene Trap Consortium (IGTC, http://www.genetrap.org/index.html ).
- For information regarding our various services, please visit the CARD website at http://cardb.cc.kumamoto-u.ac.jp/transgenic/index.jsp.

## Part II - Mouse/Rat Strain Resource

| Center for Animal Resources and Development<br>CARD, Kumamoto University | |
|---|---|
| Repository Director | Naomi Nakagata |
| Email | nakagata@kumamoto-u.ac.jp |
| Repository personnel | PI: 1<br>Staff: 10 |
| Mouse strain resource | Cryopreserved 1,635<br>ES cells 1,266 |
| IMSR registered? | ● Yes<br>○ No |
| Source of resource | ○ Government funding generated<br>● Deposited by researchers |



**Part III - Special Announcement**

We held overseas training courses on the Cryopreservation of Mouse Germplasm at the venues below:

1) Shanghai Laboratory Animal Center, Chinese Academy of Sciences, Shanghai (2002)
http://card.medic.kumamoto-u.ac.jp/card/japanese/kenkyu/sigen/kensyu/kensyu-kokugai.html
2) College of Life Sciences, Peking University, Beijing (2005)
http://card.medic.kumamoto-u.ac.jp/card/japanese/kenkyu/sigen/kensyu/kensyu-pekin.html
3) Bio-Evaluation Center, Korea Research Institute of Bioscience and Biotechnology (KRIBB), Chungbuk (2008)
http://card.medic.kumamoto-u.ac.jp/card/japanese/kenkyu/sigen/kensyu/kensyu-Korea.html
4) BIOPOLIS, Singapore (2011)
http://card.medic.kumamoto-u.ac.jp/card/japanese/kenkyu/sigen/kensyu/kensyu23Singapore.html
5) National Laboratory Animal Center, National Applied Research Laboratories, Taipei (2012).
http://card.medic.kumamoto-u.ac.jp/card/japanese/kenkyu/sigen/kensyu/kensyu_Taiwan.html
6) National Institutes for Food and Drug Control, Beijing (2013)
http://card.medic.kumamoto-u.ac.jp/card/japanese/kenkyu/sigen/kensyu/kensyu_Beijing.html
7) Spanish National Centre for Biotechnology (CNB-CSIC), Madrid (2013)
http://card.medic.kumamoto-u.ac.jp/card/japanese/kenkyu/sigen/kensyu/kensyu_Madrid.html

Recently, we developed the following reproductive engineering techniques in mice:

1) Collection and Transport at Cold Temperature of Cauda Epididymis
http://card.medic.kumamoto-u.ac.jp/card/english/sigen/manual/cetransp.html
2) Simple Vitrification of Mouse Oocytes
http://card.medic.kumamoto-u.ac.jp/card/english/sigen/manual/cryooocyte.html

3) Rescue In Vitro Fertilization Method for Legacy Stock of Cryopreserved Spermatozoa
http://card.medic.kumamoto-u.ac.jp/card/english/sigen/manual/jaxcryoivf.html


| Developmental Biology and Molecular Medicine, Shanghai | |
|---|---|
| Institute Director/ President | Dr. Tian Xu |
| AMMRA contact person | Dr. Xiaohui Wu |
| Phone | +86-21-6564-3718 |
| E-mail | xiaohui_wu@fudan.edu.cn |
| Institute address | Yifu Building of Science and Technology, Fudan University, Shanghai, 200433, China |
| Website | http://idm.fudan.edu.cn |

# Developmental Biology and Molecular Medicine, Shanghai

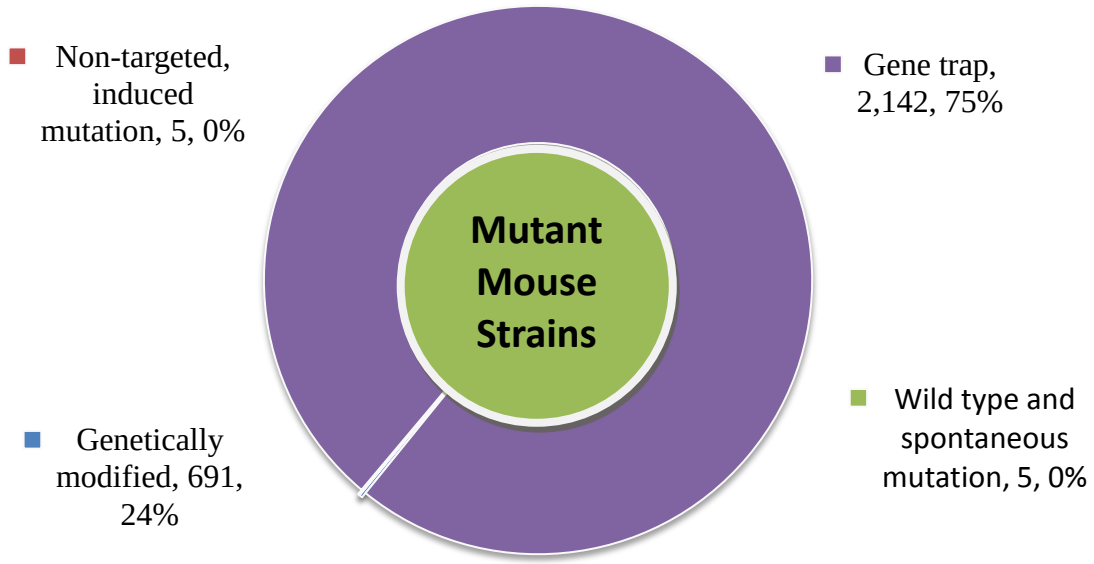
**Part I – Institution Briefing**

The Institute of Developmental Biology and Molecular Medicine at Fudan University (IDM) is a non-profit biomedical research center and the host institute of China National Center for International Research of Development and Disease. IDM pursues broad biomedical researches with a strong effort in the area of developmental biology and molecular mechanisms of human diseases. It works closely with the School of Life Science, Fudan University for in building scientific and academic excellence in China. In addition to the funding from Fudan University, the research activities of IDM are also supported by government funding agencies including the Ministry of Science and Technology (MOST), the National Natural Science Foundation of China (NSFC), and the Sciences and Technology Commission of Shanghai Municipality (STCSM).

IDM holds a SPF mouse facility accredited by STCSM. It not only act as the repository of PBmice, a collection of 5,000 live or cryopreserved mutants generated by piggyBac insertional mutagenesis (http://idm.fudan.edu.cn/PBmice ), but also provides paid service for GM mouse generation, cryopreservation, and various phenotyping assays. The facility is expected to be a loyal partner in projects initiated by IDM researchers and external users who seek to understand the mechanisms of disease and development. It provides expertise, equipment and other resources to effectively move individual projects forward in a timely manner.

**Part II - Mouse/Rat Strain Resource**

| PBmice database, Shanghai | | |
|---|---|---|
| Repository Director | Dr. Tian Xu | |
| Email | Tian.xu@yale.edu | |
| Repository personnel | PI: 6<br>Staff: 30 | |
| Mouse strain resource | Live Strains<br>Cryopreserved<br>ES cells<br>Vector | Mice:1408/ Rat:16<br>Mice:4,511<br>Mice:11<br>Mice:14 /Rat:3 |
| IMSR registered? | ○ Yes<br>● No | |
| Source of resource | ● Government funding generated<br>● Deposited by researchers | |




| Korea Research Institute of Bioscience and Biotechnology, Ochang | |
|---|---|
| Institute Director/ President | Dr. Hyoung-Chin Kim |
| AMMRA contact person | Dr. Hyoung-Chin Kim |
| Phone | +82-43-240-6560 |
| E-mail | hckim@kribb.re.kr |
| Institute address | Laboratory Animal Resource Center, KRIBB, 30 Yeongudanji-ro, Ochang-eup, Chengwon-gun, Cheongju, Chungcheongbuk-do 363-883, Korea |
| Website | http://www.kribb.re.kr/ (KRIBB)<br>http://mouse.kribb.re.kr/<br>(LARC, KRIBB, under reconstruction) |

# Laboratory Animal Resource Center, KRIBB, Ochang

**Part I – Institution Briefing**

Korea Research Institute of Bioscience and Biotechnology (KRIBB) is a non-profit institute funded by Korean government.

The Korea Research Institute of Bioscience and Biotechnology (KRIBB) is the government-funded non-profit research institute dedicated to state-of the-art bioscience and biotechnology. The Korean government has been systematically promoting biotechnology through the national plan [Bio-Vision 2016] to make Korea much stronger in bioscience and technology.


KRIBB is also designated by Ministry of Science, ICT and Future Planning (MSIP) as a principal institution responsible for archiving resources used for researches and development in the field of bioscience. The Laboratory Animal Resource Center (LARC), KRIBB is one of the centers in KRIBB and is in charge of the archiving mouse resources.

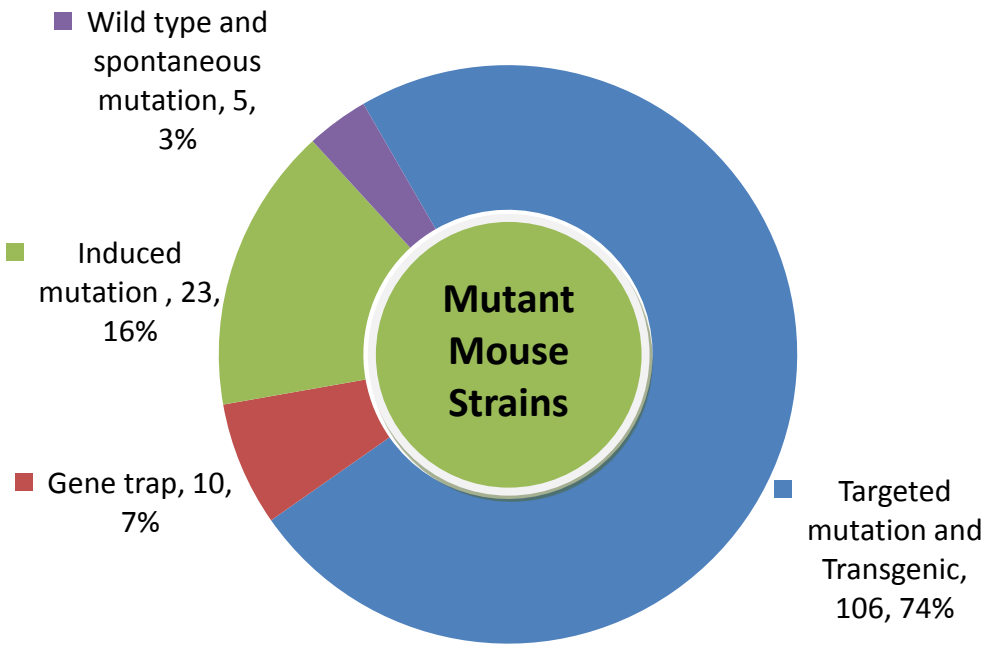
Therefore, one of the main missions of LARC, KRIBB is to archive the mouse resource. Deposited mouse resources are kept as frozen embryos or sperms. Those frozen resources are re-vitalized when requested by researchers. Recently, we have

established broad-based mouse phenotyping pipeline to help identification of mammalian gene functions. LARC, KRIBB have a platform to produce mutant mice by microinjection or RGEN. The information on the deposited mouse strains is accumulated into our data base which is opened to public in a limited fashion. LARC, KRIBB will provide these services to scientific society, soon.

LARC, KRIBB have been always seeking ways to provide better services to research community.

## Part II - Mouse/Rat Strain Resource

| LARC | |
|---|---|
| Repository Director | Dr. Hyoung-Chin Kim |
| Email | hckim@kribb.re.kr |
| Repository personnel | PI: 4<br>Staff: 23 |
| Mouse strain Resource | Live: 15<br>Cryopreserved: 129 |
| IMSR registered? | ○ Yes<br>● No |
| Source of resource | ● Government funding generated<br>● Deposited by researchers |



## Part III - Special Announcement

**Laboratory animal Workshop**

- Basic technics for laboratory animals
- Health and genetic monitoring
- Embryo freezing/thawing/transfer

Date: November 18-19, 2014

Place: LARC, KRIBB (Ochang campus)

Organizer: LARC, KRIBB


**CIEA-KRIBB Joint Workshop**

- Health monitoring & management

Date: February 13-14, 2014

Place: KRIBB

Organizer: KRIBB-CIEA


| National Laboratory Animal Center,<br>National Applied Research Laboratories, Taipei | |
|---|---|
| Institute Director/ President | Dr. Chun-Keung Yu |
| AMMRA contact person | Dr. Chi-Kuang Leo Wang |
| Phone | +886-2-2789-5567 |
| E-mail | cklwang@narlabs.org.tw |
| Institute address | 128 Academia Road, Section 2, Nankang, Taipei 115, Taiwan |
| Website | http://www.nlac.org.tw/english/default.asp |

# National Laboratory Animal Center,
# National Applied Research Laboratories, Taipei

**Part I – Institution Briefing**

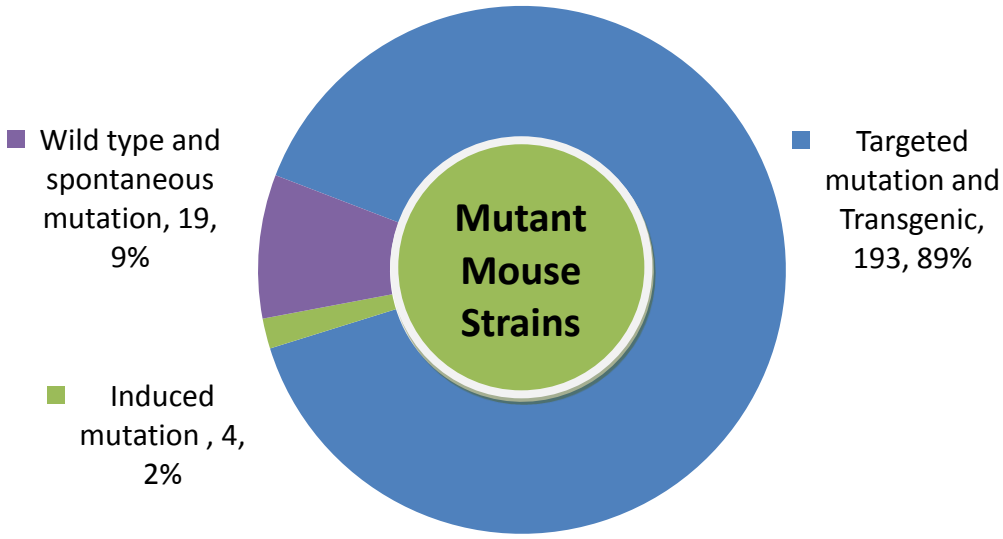
The National Laboratory Animal Center (NLAC) is a non-profit institute under the National Applied Research Laboratories (NARLabs); the funding source is supported by the government. The missions of NLAC NARLabs are to supply rodent resources and technical supports for the research communities in Taiwan. NLAC NARLabs operations are accredited by ISO/IEC17025, ISO27001:2005, ISO 9001:2008, and awarded by AAALAC Full Accreditation; NLAC NARLabs services are also enrolled in Performance Evaluation Program for Diagnostic Laboratories (PEP) to assure quality control performance.

In addition to the rodent supply and diagnostic services, NLAC NARLabs has been devoting deeply in the generation, archiving and sharing of GM mouse and rat models. To advocate the use of important rodent resource in Taiwan, NLAC NARLabs lunched a regional repository project in 2009, named Rodent Model Resource Center (RMRC). RMRC-NLAC offers cryopreservation and ART services upon requests to collect and preserve GM models generated by researchers in Taiwan. Furthermore, RMRC-NLAC also generates novel GM models to enrich the repository resource. Since 2010, RMRC-NLAC has been a registered member of International Mouse Strain Resource (IMSR). Since 2013, NLAC became a member of International Mouse Phenotyping Consortium (IMPC). With the successful development of a unique BAC gene manipulation system, NLAC NARLabs subsequently strengthens the transgenic mice/rat platform as well as the conditional knockout / Cre mice production pipelines. Today, NLAC NARL also provide knock-out and/or knock-in service with latest CRISPR/Cas9 and TALEN approaches.

To better support the research communities, NLAC, NARLabs will continuously seek for connection and collaboration with renowned organizations and associations around the world.

## Part II - Mouse/Rat Strain Resource

| Rodent Model Resource Center (RMRC) | |
|---|---|
| Repository Director | Dr. Chi-Kuang Leo Wang |
| Email | cklwang@narlabs.org.tw |
| Repository personnel | PI: 6<br>Staff: 35 |
| Mouse strain Resource | Live: 56<br>Cryopreserved: 150 |
| Rat strain Resource | Live: 8<br>Cryopreserved: 2 |
| IMSR registered? | ● Yes<br>○ No |
| Source of resource | ● Government funding generated<br>● Deposited by researchers |



## Part III - Special Announcement

Local training

**Strategies for Modeling Human Disease in the Laboratory Mouse**
Date: Mar. 26th- 28th, 2014
Place: Academia Sinica
Organizer: NLAC NARLabs
Co-Organizer: The Jackson Laboratory

**Mouse and Rat Blood Sampling, Drug Administration, Euthanasia Practical Training**
May 6th , 2014 @ NLAC NARLabs-Taipei Center & Tainan Facility
May 12th , 2014 @ NLAC NARLabs-Taipei Center & Tainan Facility

**Introduction of Mice Anatomy and Histology**
July 8th , 2014 @ NLAC NARLabs-Taipei Center & Tainan Facility
Aug 5th -12th, 2015 @ NLAC NARLabs-Taipei Center

**Human Disease Modeling (TBD)**
Date: Sep., 2015
Place: Academia Sinica
Organizer: NLAC NARLabs
Co-Organizer: TBD

**International Mouse Phenotyping Conference**


**Genetically Modified Animal Care & Refinement Workshop**


**Introduction of Mice Anatomy & Histology**

**Strategies for Modeling Human Disease in the Laboratory Mouse**


| National Resource Center of Mutant Mice (NRCMM), Nanjing | |
|---|---|
| **Institute Director/ President** | Dr. Xiang Gao |
| **AMMRA contact person** | Dr. Jing Zhao |
| **Phone** | +86-25-5864-1533 |
| **E-mail** | zhaojing@nicemice.cn<br>gaoxiang@nju.edu.cn |
| **Institute address** | 12, Xuefu Road, Pukou District, Nanjing 210061 |
| **Website** | www.nicemice.cn<br>www.nbri-nju.com/en-us/ |

# National Center for Mutant Mice of China, Nanjing

**Part I – Institution Briefing**

National Resource Center of Mutant Mice (NRCMM) is designated by the Ministry of Science and Technology of China, recognized as one of the major laboratory animal resource center in China. NRCMM is affiliated with the Model Animal Research Center of Nanjing University (MARC) and Nanjing Biomedical Research Institute of Nanjing University (NBRI). NRCMM has been awarded full accreditation by AAALACI since 2006.

The mission of NRCMM is to promote the biomedical research in China by providing mouse models and related to services. NRCMM services include depository, cryopreservation, and distribution of mutant mice. As one of the largest transgenic center in China, NRCMM also provide services to generate and phenotype genome modified mouse lines for biomedical research community. In addition, NRCMM also hosts education programs for mouse colony management and mouse genetics studies.

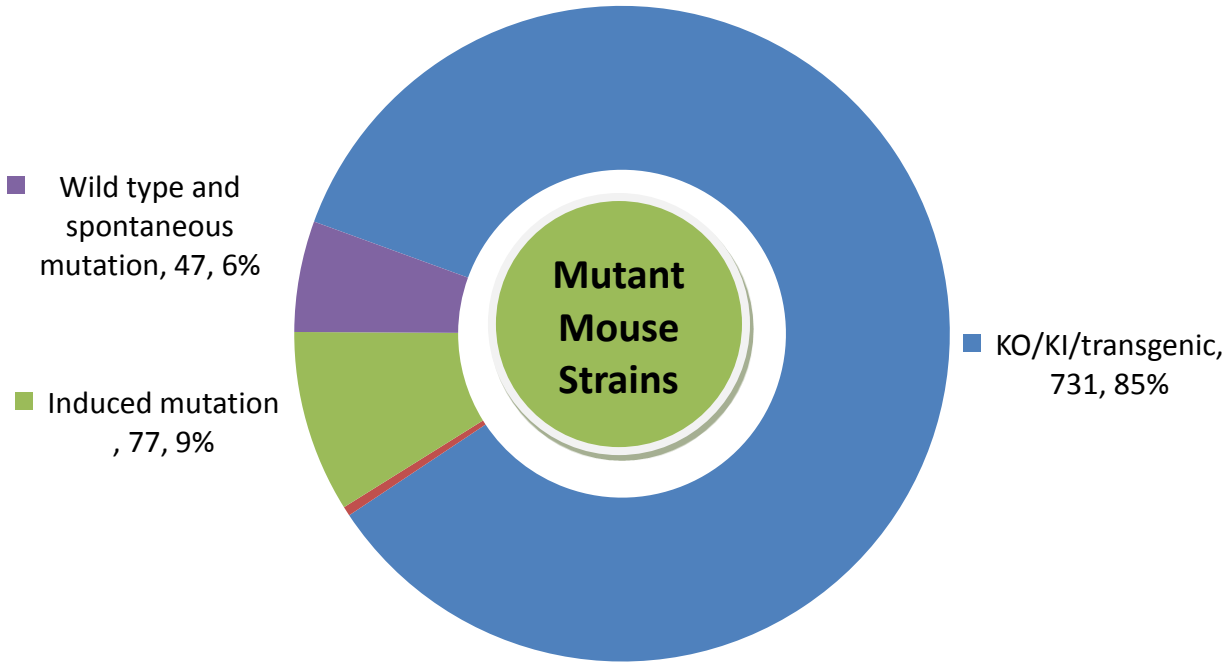
NRCMM has three departments. The resource department is responsible for the mouse importation, breeding, distribution, cryopreservation, and genetic/microbiological monitoring. The technical service team provides novel transgenic and phenotyping services. And the administration office manages the human resource, financial affair, facility maintenance, and education program. NRCMM joined the International Mouse Phenotyping Consortium in 2011 and is also the founding member of Asian Mouse Mutagenesis and Resource Association (AMMRA) and Asian Mouse Phenotyping Consortium (AMPC). Since 2011, NRCMM became a member of International Mouse Strain Resource (IMSR). NRCMM is also one of the sponsors of China Mouse Strain Resource (CMSR). In 2014, NRCMM holds total 2185 strains of mice. With the new animal facility brought into service, NRCMM

generated over 920 of customized mice and supplied more than 300 strains to customs in China. NRCMM also helped the Chinese scientists in 29 research institutes/universities to import mouse strains from US, UK, France, Australia and Austria. NRCMM is also very grateful to receive more mouse strains donated by scientists in China.

Additional information can be found at www.nicemice.cn and www.nbri-nju.com/en-us/

## Part II - Mouse/Rat Strain Resource

| National Resource Center of Mutant Mice (NRCMM) | |
|---|---|
| Repository Director | Dr. Xiang Gao |
| Email | gaoxiang@nju.edu.cn |
| Mouse strain Resource | Live:399<br>Cryopreserved: 460 |
| IMSR registered? | ● Yes<br>○ No |
| Source of resource | ● Government funding generated<br>● Deposited by researchers |



## Part III - Special Announcement

1. **5th Summer Camp for Model Animal Research. Nanjing, China. July 7-11, 2014**

   55 senior college students were selected from 298 applicants from 69 universities.

2. **Nanjing University MARC/RIKEN BRC International Short Summer Course of the Mouse. Tsukuba, Japan. July 28-30, 2014**

   The course provided comprehensive introduction for model technology of mouse genetics and phenotyping.

3. **Nanjing University MARC/RIKEN BRC International Short Summer Course of the Mouse. Nanjing. July, 2015**

4. **1st China Mouse Strain Resource (CMSR) meeting. Nanjing. June 8 2014**

   There are over 100 members in CMSR, including universities, research institutes, and biomedical companies. CMSR holds 590 donated strains from different members.

## Selected Publications from NRCMM


1. Huang Z, Ruan H, Zhang Z, Chen W, Lin Z, Zeng H, Gao X (2014) Mutation in the first Ig-like domain of Kit leads to JAK2 activation and myeloproliferation in mice. ***The American journal of pathology 184: 122-132***
2. Zhang Q, Li YF, Zhang L, Yang N, Meng J, Zuo PP, Zhang Y, Chen J, Wang L, Gao X, Zhu DH (2013) E3 ubiquitin ligase RNF13 involves spatial learning and assembly of the SNARE complex. ***Cellular and Molecular Life Sciences 70: 153-165.***
3. Huang Z, Ruan H-B, Xian L, Chen W, Jiang S, Song A, Wang Q, Shi P, Gu X, Gao X (2014) The stem cell factor/Kit signalling pathway regulates mitochondrial function and energy expenditure. ***Nature communications 5: 4282.***
4. Qi X, Xu JY, Gu PY, Yang X, Gao X (2014) PTEN in smooth muscle cells is essential for colonic immune homeostasis. ***International Journal of Biochemistry & Cell Biology 53: 108-114.***
5. Wen Luo, Xia Zhao, Hengwei Jin, Lichan Tao, Jingai Zhu, Huijuan Wang, Brian A. Hemmings, and Zhongzhou Yang. (2014) Akt1 signaling coordinates BMP signaling and beta-catenin activity to regulate second heart field progenitor development. ***Development*** (Accepted)
6. Xia Zhao, Shuangshuang Lu, Junwei Nie, Xiaoshan Hu, Wen Luo, Xiangqi Wu, Hailang Liu, Qiuting Feng, Zai Chang, Yaoqiu Liu, Yunshan Cao, Haixiang Sun, Xinli

Li, Yali Hu, Zhongzhou Yang. (2014) Phosphoinositide-Dependent Kinase 1 and mTORC2 Synergistically Maintain Postnatal Heart Growth and Heart Function in Mice. ***Mol. Cell. Biol.*** *34 (11):1966-75.* (Spotlight article/cover)

7. Baiyin Yuan, Ping Wan, Dandan Chu, Junwei Nie,Yunshan Cao, Wen Luo, Shuangshuang Lu, Jiong Chen* and Zhongzhou Yang*. (2014) A Cardiomyocyte-Specific Wdr1 Knockout Demonstrates Essential Functional Roles for Actin Disassembly during Myocardial Growth and Maintenance in Mice. ***Am J Pathol****. 184 (7):1967-80* (*Co-corresponding author)

8. Pei Wang, Beibei Mao, Wen Luo, Bin Wei, Wenjian Jiang, Dong Liu, Lei Song, Guangju Ji, Zhongzhou Yang,* Yong-Qiang Lai,* Zengqiang Yuan*. (2014) The alteration of Hippo/YAP signaling in the development of hypertrophic cardiomyopathy. ***Basic Res Cardiol****.109 (5):435* (*Co-corresponding author).

9. Yijun Gao, Wenjing Zhang, Xiangkun Han, Fuming Li, Xujun Wang, Rui Wang, Zhaoyuan Fang, Xinyuan Tong, Shun Yao, Fei Li, Yan Feng, Yihua Sun, Yingyong Hou, Zhongzhou Yang, Kunliang Guan, Haiquan Chen, Lei Zhang & Hongbin Ji. (2014) YAP inhibits squamous transdifferentiation of Lkb1-deficient lung adenocarcinoma through ZEB2-dependent DNp63 repression. ***Nat. Commun.*** *5:4629.*

10. ShuilongGuo, Hui Ye, Yan Teng, Youliang Wang, Guan Yang, Xiubin Li, Chong Zhang, Xue Yang, Zhongzhou Yang and Xiao Yang.(2013)Akt-p53-miR-365-cyclin D1/cdc25A axis contributes to gastric tumorigenesis induced by PTEN deficiency. ***Nat. Commun.****4:2544.*

11. Xiangqi Wu, Yunshan Cao, JunweiNie, Hailang Liu, Shuangshuang Lu, Xiaoshan Hu, Jingai Zhu, Xia Zhao, Jiandong Chen, Xiaohu Chen, Zhongzhou Yang* and Xinli Li*. (2013) Genetic and Pharmacological Inhibition of Rheb1-mTORC1 Signaling Exerts Cardioprotection against Adverse Cardiac Remodeling in Mice. ***Am. J. Pathol.*** *182: 2005-2014*. (*co-corresponding author)

12. Jie Yan, Guangsen Shi, Zhihui Zhang, Xi Wu, Zhiwei Liu, Lijuan Xing, Zhipeng Qu, Zhen Dong, Ling Yang and Ying Xu (2014) An intensity ratio of interlocking loops regulates circadian period length. ***Nucleic Acid Research***, 42(16):10278-87.

13. Zhiwei Liu, Moli Huang, Xi Wu, Guangsen Shi, Lijuan Xing, Zhen Dong, Zhipeng Qu, Jie Yan, Ling Yang, Satchidananda Panda & Ying Xu (2014）PER1 phosphorylation specifies feeding rhythm in mice. ***Cell Report***, **7(5) 1509-1520.**

14. Xi Wu, Binbin Wang, Zhen Dong, Sirui Zhou, Zhiwei Liu, Guangsen Shi, Yunxia Cao, Ying Xu （2013）A *NANOS3* mutation linked to protein degradation causes premature ovarian insufficiency. ***Cell Death & Disease***, 4:e825.

15. Guangsen Shi, Lijuan Xing, Zhiwei Liu, Zhipeng Qu, Xi Wu, Zhen Dong, Xiang Gao, Moli Huang, Jie Yan, Ling Yang , Yi Liu, Louis Ptacek & Ying Xu (2013) Dual roles of FBXL3 in the mammalian circadian feedback loops are important for period determination and robustness of the clock. ***Proceedings of the National Academy of Sciences***，*110 (12) 4750-4755.*

16. Niu YY, Shen B, Cui YQ, Chen YC, Wang JY, Wang L, Kang y, Zhao XY, Si W, Li W, Xiang AP, Zhou JK, Guo XJ, Bi Y, Si CY, Hu B, Dong GY, Wang H, Zhou ZM, Li TQ, Tan T, Pu XQ, Wang F, Ji SH, Zhou Q, Huang XX, Ji WZ, Sha JH. (2014) Generation of Gene-Modified Cynomolgus Monkey via Cas9/RNA-Mediated Gene Targeting in One-Cell Embryos**.** ***Cell*** 156: 836-843

17. Shen B, Zhang W, Zhang J, Zhou J, Wang J, Chen L, Wang L, Hodgkins A, Lyer V, Huang XX, Skarnes, WC (2014) Efficient genome modification by CRISPR-Cas9 nickase with minimal of-target effects. ***Nature methods*** 11: 399-402


| RIKEN BioResource Center (BRC), Tsukuba | |
|---|---|
| Institute Director/ President | Yuichi Obata |
| AMMRA contact person | Yuichi Obata |
| Phone | +81-29-836-9144 |
| E-mail | yobata@rtc.riken.go.jp |
| Institute address | 3-1-1 Koyadai, Tsukuba, Ibaraki, 305-0074, Japan |
| Website | http://www.brc.riken.jp/inf/en/index.shtml |

# RIKEN BioResource Center (BRC), Tsukuba

**Part I – Institution Briefing**

- RIKEN BioResource Center (BRC) was established in 2001 at Tsukuba, Japan.
- Type and Funding source: Not-for-profit and government-funded institution.
- Experimental Animal Division (http://www.brc.riken.jp/lab/animal/en/ ) has been designated as the core facility for mouse resources by the National Bioresource Project (NBRP, http://www.nbrp.jp/index.jsp ) of the MEXT, Japan since FY2002.
- A searchable database: http://www2.brc.riken.jp/lab/animal/search.php
- A contact address: animal@brc.riken.jp
- Cryopreservation and advanced reproductive technology: Bioresource Engineering Division headed by Dr. Atsuo Ogura. http://www.brc.riken.jp/lab/kougaku/indexE.html
- A phenotyping platform: Japan Mouse Clinic lead by Dr. Shigeharu Wakana. http://www.brc.riken.jp/lab/jmc/mouse_clinic/en/index.html
- RIKEN BRC is a founding member of Asian Mouse Mutagenesis & Resource Association (AMMRA, http://www.ammra.info/), The Federation of International Mouse Resources (FIMRe, http://www.fimre.org/ ), Asian Mouse Phenotyping Consortium (AMPC, http://ampc.asia ), and Asian Network of Research Resource Centers (ANRRC, http://www.anrrc.org/ ).

- RIKEN BRC registers its mouse strains in the International Mouse Strain Resource (IMSR, http://www.findmice.org/ ), a one-stop database of FIMRe, and gene-trap ES cells in the International Gene Trap Consortium (IGTC, http://www.genetrap.org/index.html).
- Japan Mouse Clinic and Experimental Animal Division have been participating in the International Mouse Phenotyping Consortium (IMPC) since September, 2011. http://www.mousephenotype.org/
- RIKEN BRC has been offering training courses on advanced technologies for the use of mouse resources to Asian scientists and technicians

The Australian Phenomics Facility has joined as a new member of the AMMRA on May 18, 2013 in the 2013 AMMRA/AMPC meeting held at RIKEN BRC, Tsukuba. Directors tightly gathered for the future.

## Part II - Mouse/Rat Strain Resource

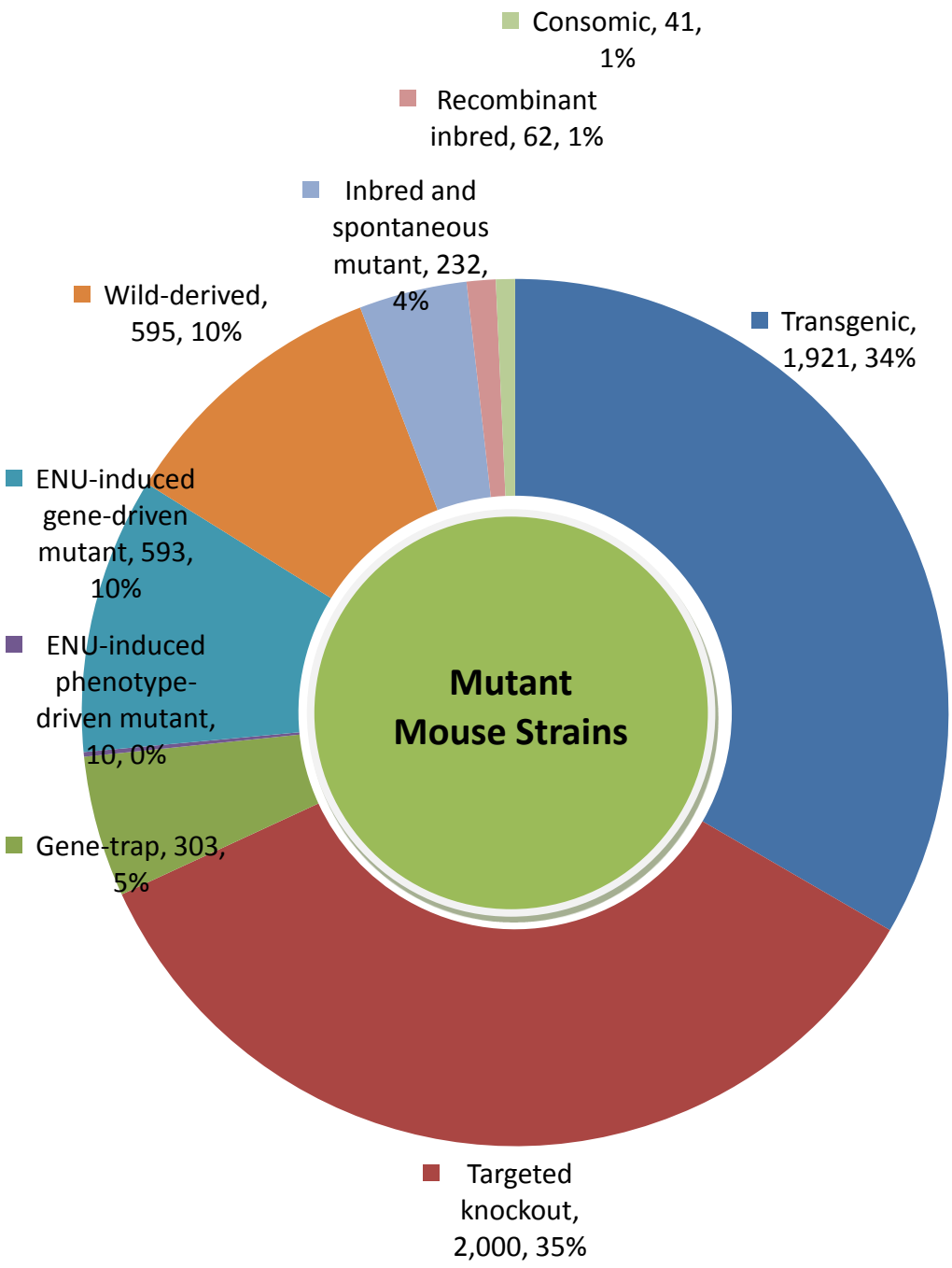
| RIKEN BRC Experimental Animal Division | |
|---|---|
| **Repository Director** | **Atsushi Yoshiki, Ph.D., Head** |
| **Email** | **yoshiki@brc.riken.jp** |
| **Repository personnel** | **PI: 1**<br>**Senior Research Scientist: 2**<br>**Senior Technical Scientist: 2**<br>**Research Scientist: 1**<br>**Technical Staff: 10**<br>**Assistant:2**<br>**Contract Staff: 52** |
| **Website** | **http://www.brc.riken.jp/lab/animal/en/** |
| **Mouse strain Resource** | **Live: 599**<br>**Cryopreserved: 5158**<br>**ES/iPS cells [a]:1847**<br>**BAC clones [b]: C57BL/6N, MSM** |
| **Rat strain Resource** | **Cryopreserved: 9160**<br>**ES/iPS cells [a]: 1**<br>**BAC clones [b]: F344, LE, ACI** |
| **IMSR registered?** | **● Yes**<br>**○ No** |
| **Source of resource** | **● Government funding generated**<br>**● Deposited by researchers** |

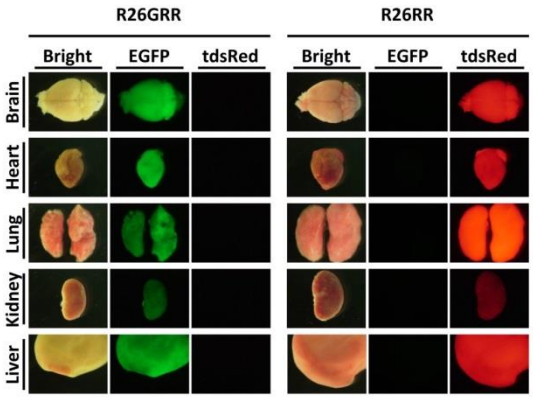
Notes:

a: 1,748 gene-trap ES cell clones developed by Dr. Ishida, 92 mouse ES cells, 7 mouse iPS cells and 1 rat iPS cell are distributed from RIKEN BRC Cell Engineering Division (Cell Bank) (Dr. Yukio Nakamura, cellqa@brc.riken.jp).

b: Distributed from RIKEN BRC Gene Engineering Division (DNA Bank) (Dr. Yuichi Obata, dnabank@brc.riken.jp).

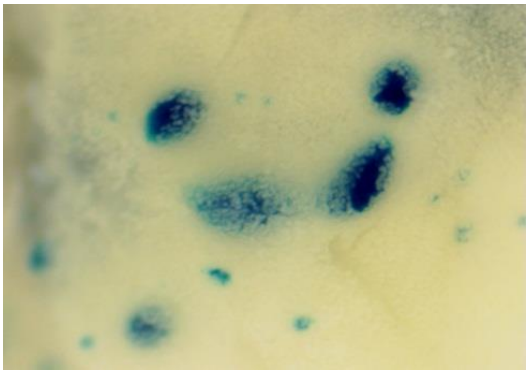
c: back-up storage of NBRP-rat including embryos and ENU-mutant sperm archive.


Consomic, 41, 1%
Recombinant inbred, 62, 1%
Inbred and spontaneous mutant, 232, 4%
Wild-derived, 595, 10%
Transgenic, 1,921, 34%
ENU-induced gene-driven mutant, 593, 10%
ENU-induced phenotype-driven mutant, 10, 0%
Gene-trap, 303, 5%
Mutant Mouse Strains
Targeted knockout, 2,000, 35%



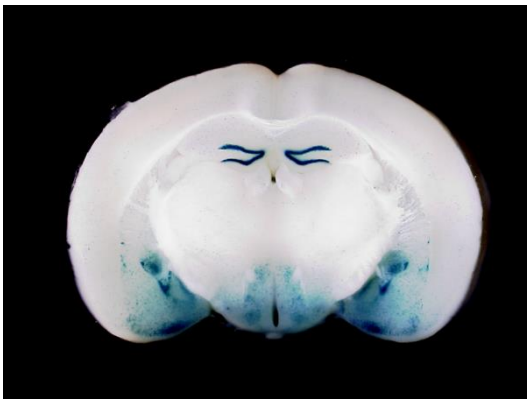

**Dual color conditional reporter:** Hasegawa Y, Daitoku Y, Sekiguchi K, Tanimoto Y, Mizuno-Iijima S, Mizuno S, Kajiwara N, Ema M, Miwa Y, Mekada K, Yoshiki A, Takahashi S, Sugiyama F, Yagami K. Novel ROSA26 Cre- reporter knock-in C57BL/6N mice exhibiting green emission before and red emission after Cre-mediated recombination. ***Exp Anim*** 62: 295-304, 2013.

*This figure reproduced from the above paper by the courtesy of the authors and the publisher.*



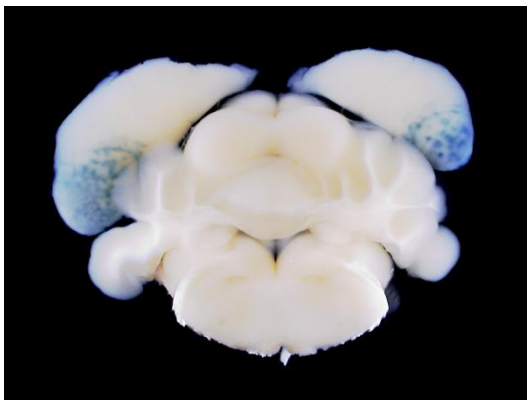
**Ins1-cre**: Hasegawa Y, Daitoku Y, Mizuno S, Tanimoto Y, Mizuno-Iijima S, Matsuo M, Kajiwara N, Ema M, Oishi H, Miwa Y, Mekada K, Yoshiki A, Takahashi S, Sugiyama F, Yagami K. Generation and characterization of Ins1- cre-driver C57BL/6N for exclusive pancreatic beta cell-specific Cre-loxP recombination. ***Exp Anim*** 63, 183-191, 2014.

*Figure: LacZ staining of Ins1-cre x ROSA-lacZ reporeter*



**Dentate gyrus granular neuron specific Cre, Dock10-cre: Discovery of a novel neural circuit from DG to CA2** Kohara K, Pignatelli M, Rivest AJ, Jung HY, Kitamura T, Suh J, Frank D, Kajikawa K, Mise N, Obata Y, Wickersham IR, Tonegawa S. Cell type-specific genetic and optogenetic tools reveal hippocampal CA2 circuits. ***Nat Neurosci*** 17: 269 -279, 2014.

*Figure: LacZ staining of Dock10-cre x ROSA-lacZ reporeter*



**Entorhinal cortex layer II island cells specific Cre, Wfs1-cre: Discovery of a novel neural circuit for temporal association memory**. Kitamura T, Pignatelli M, Suh J, Kohara K, Yoshiki A, Abe K, Tonegawa S. Island Cells Control Temporal Association Memory. ***Science*** 343(6173): 896-901, 2014.

*Figure: LacZ staining of Wfs1-cre x ROSA-lacZ reporeter*

## Part III - Special Announcement

**The 60th annual meeting of Japanese Association of Laboratory Animal Science (JALAS)** was held on May 15-17, 2013 at Tsukuba International Congress Center by Dr. Yuichi Obata, Director of RIKEN BRC.

**2013 AMMRA & AMPC business meeting** was held on May 17-18th, 2013 at RIKEN BRC.
**The Australian Phenomics Facility has joined as a new member of the AMMRA.**

**The 27th Molossinus Colloquium joint with RIKEN Symposium entitled "The genome design technology and disease models"** was held on June 28-29 in Tsukuba.

**The 2nd NANJING UNIVERSITY MARC/RIKEN BRC International Summer Intensive Course of the Mouse** was held on July 29-31, 2013 at MARC of Nanjing University. Keynote speakers: Dr. Tom Weaver, Director of MRC Mary Lyon Centre (UK) and Prof. David Wasserman, Director of Mouse Metabolic Phenotyping Center, Vanderbilt University

**The 3rd NANJING UNIVERSITY MARC/RIKEN BRC International Summer Intensive Course of the Mouse** was held with topics of Brain Science on July 28-30, 2014 (below photo). The Course was supported partially by the co-sponsorship of Japan Society for the Promotion of Science (JSPS) and Natural Science Foundation of China (NSFC) within the framework of Bilateral Joint Research Projects/Seminars.

**The 4th NANJING UNIVERSITY MARC/RIKEN BRC International Short Summer Course of the Mouse** is planned to take place from July 27 (Mon) to 29 (Wed), 2015 at MARC, Nanjing University. We will focus on the heart development and diseases.


The 3rd NANJING UNIVERSITY MARC/RIKEN BRC International Summer Intensive Course of the Mouse held on July 28-30, 2014 at RIKEN BRC, Tsukuba. Eighteen trainees from 5 countries participated in the course.

# In Memoriam, Dr. Kazuo Moriwaki

***"It is our great sorrow to announce death of Dr. Kazuo Moriwaki."***

*-reproduced from RIKEN BRC web site on November 23, 2013*

**D**r. Moriwaki died of colon cancer in the early morning of November 23, 2013. He was 83 years old. Until his death, he was Special Consultant to RIKEN BioResource Center (BRC).

**I**n his career, he served as Director of RIKEN BRC, Director of RIKEN Tsukuba Institute and Vice Director and Honorary Professor of National Institute of Genetics.
Dr. Moriwaki was a member of a committee for establishment of a bioresource center in RIKEN and appointed as the Founding Director of RIKEN BRC in 2001.

**H**e, as the first director of a specialized center focusing biological resources ever established in Japan, has built successfully a solid foundation for the current activities in the BRC by laying out institutional structure and gaining support from government and scientific community.

**D**r. Moriwaki was a renowned world leader in Mouse Genetics and trained numerous scientists in his career.

**S**ince he was diagnosed as colon cancer two years ago, he had been fighting against the cancer. Sadly, he succumbed to it. He is survived by his wife, Sachiko, two daughters and four grandchildren.

**A**ll of us at the Center mourn Dr. Moriwaki's death. At the same time, we are reconfirming our determination that we will do our best to realize Dr. Moriwaki's dreams and succeed his spirit.

*Sincerely yours,*

RIKEN BioResource Center

***References***

Yuichi Obata. Greeting *in* RIKEN BRC Annual Report 2013-2014. p.5, 2014.
URL http://en.brc.riken.jp/info/pdf/14annual/05.pdf
Toshihiko Shiroishi. "Legacy of Dr. Kazuo Moriwaki" (1930-2013). Mammalian Genome 25: 193-194, 2014.

Dr. Kazuo Moriwaki and all AMMRA/AMPC participants on May 18, 2013 at RIKEN BRC.

### *"His contribution has benefited numerous researchers and scientists."*

The passing of Dr Moriwaki saddens us. His contribution in the field of laboratory animals' science has benefited numerous researchers and scientists in understanding the characters of the different mouse strains better. His absence has left an immeasurable void in the field that will be a challenge to his successor. We are grateful to Dr Moriwaki for his contributions.

*-Biological Resource Centre(BRC), A*STAR, Singapore*

### *"His contributions are well-known & wide-ranging."*

The contributions of Dr. Moriwaki to the field of life science, in particular to genetics in wild mice, are well-known and wide-ranging. We are much the worse for being deprived of his advice and vast experience. We would like to express our regret and sorrow over Dr. Moriwaki's passing.

*-Center for Animal Resources and Development (CARD), Kumamoto*

### *"He was a pioneer and leader in laboratory animal science not only in Asia but also in the world."*

I remember Dr. Moriwaki who was always smiling and ready to give an advice for being better Resource Center. I met him at the first time in the FIMRe meeting held in RIKEN BRC in 2006. In the last year, I met him and took the photo as below. He was a pioneer and leader in laboratory animal science not only in Asia but also in the world. Although he has been passed away last November, I and my colleagues at KRIBB will remember him. I am praying he sleep the eternal sleep with peace.

*May his soul rest in peace!*

*Dr. Hyoung-Chin Kim*
*-Head of Laboratory Aniamal Resource Center, KRIBB*

### *"Wish he is happy and at peace where he is."*

IDM faculty members offer our deepest condolences on the death of Dr. Moriwaki. Wish he is happy and at peace where he is.

*-Developmental Biology and Molecular Medicine, Shanghai*

### *"To us, Dr. Moriwaki is a role model, an icon, and a legend."*

He is a gentle giant in the science of mouse genetics. We sure will miss him forever.

*-National Laboratory Animal Center, NARLabs, Taiwan*

## *The Curriculum Vitae of Dr. Kazuo Moriwaki*

**Birth date and place**

1930 November 4, Tokyo

**Education**

1954 Bachelor of Zoological Science, University of Tokyo
1959 Doctor of Science, University of Tokyo

**Employment**

1959 Research scientist, National Institute of Genetics (NIG), Mishima, Japan
1964 Postdoc Fellow, Mammalian Genetics Center, University of Michigan, USA
1967 Laboratory Head, Cytogenetics Department, NIG
1984 Professor, Cell Genetics Department, NIG
1992 Vice Director, NIG
1994 Professor Emeritus, NIG
1994 Professor, School of Engineering, Fukuyama University, Fukuyama
1995 Vice President of the Graduate University for Advanced Studies, Hayama
2001 Director, RIKEN BioResource Center
2003 Director, RIKEN Tsukuba Institute and BioResource Center
2005 Special Consultant to RIKEN
2007 Special Adviser to RIKEN BioResource Center

**Public office membership**

1994 The Science Council of Japan

**Board membership**

1986 Board member, Heiwa Nakajima Foundation
1991 President, Genetics Society of Japan
1994 President, Japanese Association of Laboratory Animal Sciences
1996 President, Association for Propagation of the Knowledge of Genetics
1998 Board member, Yamada Science Foundation

**Awards**

1982 The Zoological Society of Japan Scientific Award
2004 The Japanese Association of Laboratory Animal Science Achievement Award
2008 The Mammal Society of Japan Scientific Award
2013 The Prize for Science and Technology (Research Category) by the MEXT, Japan

# AMMRA Annual Meetings

**1st AMMRA meeting, Shanghai, China, Nov., 22-24, 2006**

**2nd AMMRA meeting, Nanjing, China, Nov., 14-16, 2007**

**3rd AMMRA meeting, Daejeon, Korea, Oct., 23-24, 2008**

**4th AMMRA meeting, Kumamoto, Japan, Dec. 17-18, 2009**

**5th AMMRA pre-meeting, Hong Kong, Aug., 26-27, 2010**

**5th AMMRA meeting, Taipei, Taiwan, Nov., 8-11, 2010**

**6th AMMRA meeting, Biopolis, Singapore, Nov., 29-Dec., 2, 2011**

**7th AMMRA meeting, Nanjing, China, Mar., 15-17, 2012**

**8th AMMRA meeting, Tsukuba, Japan, May, 18, 2013**

**9th AMMRA-AMPC business meeting, Canberra, Australia, Oct., 21, 2014**

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(Accumulative list of attendants from past AMMRA meetings)

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# 2013-2014 AMMRA Annual Report

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